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On October 18, 2018, figure 3 was revised because of a calculation error.

How did employment fare a decade after its 2008 peak?

This article uses data from the Current Employment Statistics survey to examine employment changes a decade after total nonfarm employment peaked in January 2008. The analysis reveals that while some industries recovered fully and subsequently expanded, others have yet to do so.

Current Employment Statistics (CES) survey data on total nonfarm employment, a coincident indicator, help identify key turning points in the economy.¹ The relationship between payroll employment and business cycle dates from the National Bureau of Economic Research (NBER) does not fully emerge until the CES program has finalized, benchmarked, and seasonally adjusted its data and the NBER has declared the business cycle dates.² CES employment peaks and troughs can be initially determined as early as 6 months after a high or low employment level. Therefore, a relationship can be established well after a business cycle turn. Nonetheless, payroll employment peaks and troughs track closely with NBER's business cycle dates.

The NBER is a private, nonpartisan organization disseminating research findings among academics, policymakers, and business professionals. Part of its work involves identifying U.S. business cycles. It defines a recession as a widespread decline in economic activity, with significant dropoffs in real gross domestic product, real income, *employment*, industrial production, and wholesale-retail sales. Contractions begin after the peak of a business cycle and end after the trough. The NBER determined that the Great Recession started in December 2007 and lasted through June 2009.³ (See table 1.)



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Table 1. Business cycle and employment turning points, 1943–2018

CES employment turning points		NBER business cycle dates		Number of months CES employment turning points lead (+) or lag (–) NBER business cycle dates	
Peak month	Trough month	Peak month	Trough month	Months from NBER peak	Months from NBER trough
Nov 1943	Sep 1945	Feb 1945	Oct 1945	15	1
Sep 1948	Oct 1949	Nov 1948	Oct 1949	2	0
Jul 1953	Aug 1954	Jul 1953	May 1954	0	-3
Apr 1957	Jun 1958	Aug 1957	Apr 1958	4	-2
Apr 1960	Feb 1961	Apr 1960	Feb 1961	0	0
Mar 1970	Nov 1970	Dec 1969	Nov 1970	-3	0
Jul 1974	Apr 1975	Nov 1973	Mar 1975	-8	-1
(1)	(1)	Jan 1980	Jul 1980	—	—
Jul 1981	Dec 1982	Jul 1981	Nov 1982	0	-1
Jun 1990	May 1991	Jul 1990	Mar 1991	1	-2
Feb 2001	Aug 2003	Mar 2001	Nov 2001	1	-21
Jan 2008	Feb 2010	Dec 2007	Jun 2009	-1	-8

Notes:

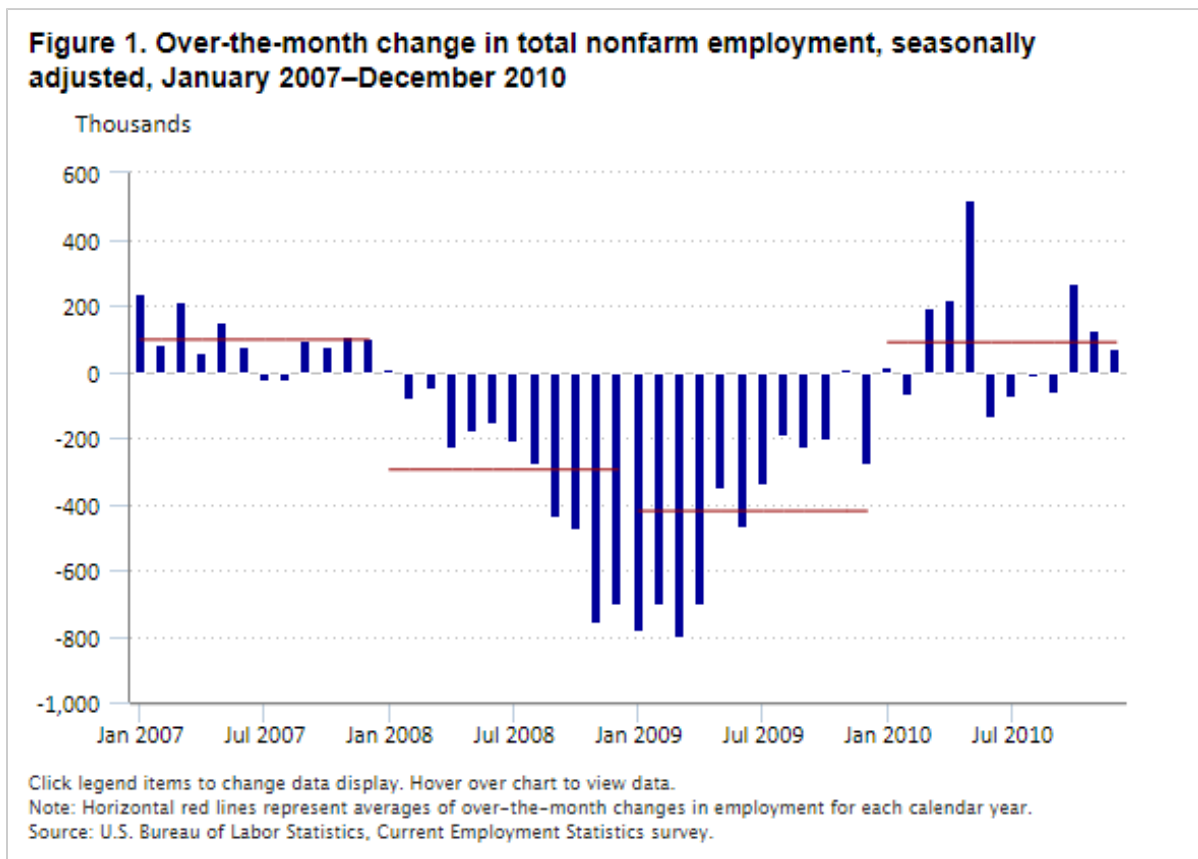
(1) No peak or trough designated because period of downturn did not meet CES criteria for peaks and troughs.

Sources: U.S. Bureau of Labor Statistics, Current Employment Statistics (CES) survey; and National Bureau of Economic Research (NBER).

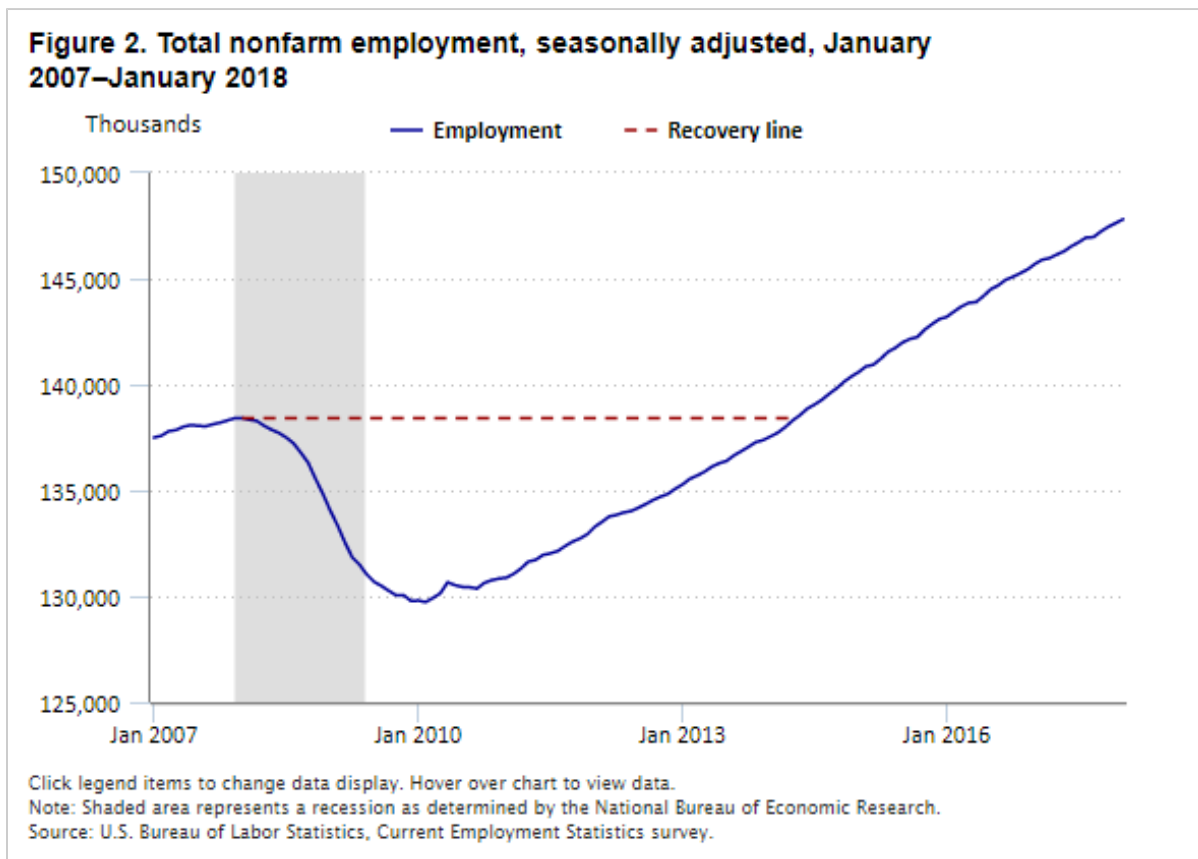
CES total nonfarm employment peaked in January 2008, lagging the official start of the recession by 1 month, and troughed in February 2010, lagging the official end of the recession by 8 months.⁴ With January 2018 marking 10 years since the last peak in total nonfarm employment, this article analyzes employment changes in the intervening period.

Total nonfarm employment

The Great Recession resulted in a period of dramatic job declines for the nation. Over-the-month employment changes in total nonfarm employment reflected the depth of the downward trend. Monthly job losses began in February 2008, reached a magnitude of 802,000 in March 2009, and then began to taper. (See figure 1.)



During the 25 months between the series' peak and trough, total nonfarm employment decreased by 8.7 million. (See figure 2.) Employment recovered 76 months later, in May 2014, marking the most prolonged recovery period in the history of the series. Since recovering, total nonfarm employment had grown by 9.2 million through January 2018.

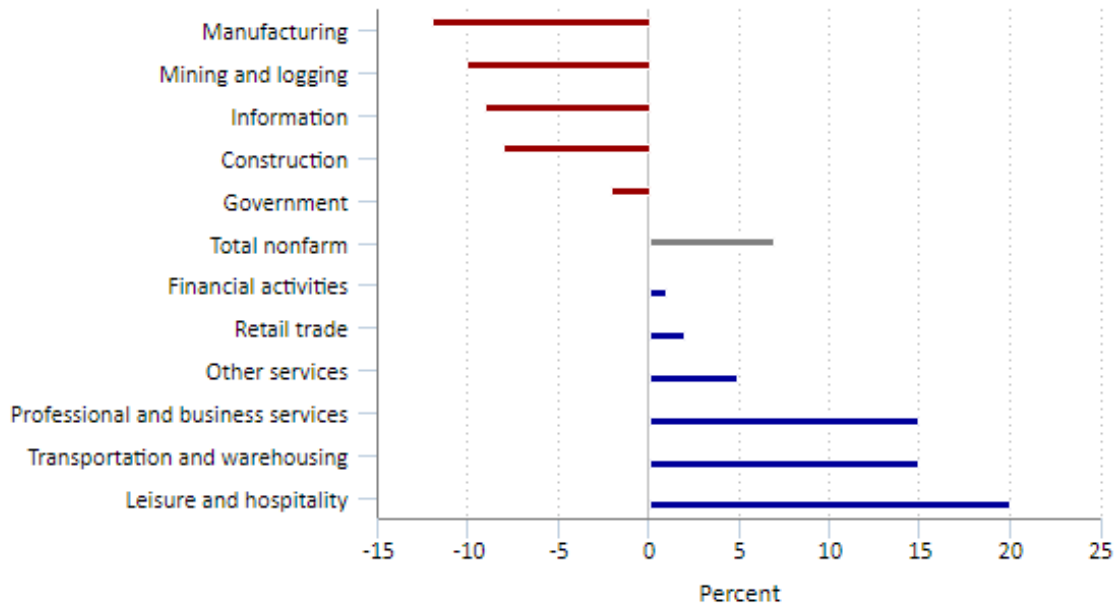


Over the recovery and expansion through January 2018, payrolls grew for 88 consecutive months.⁵ This upward streak bested the previous record of 48 months (July 1986–June 1990), becoming the longest positive trend in employment growth dating back to 1939.⁶ Since the series' trough in February 2010, over-the-month employment changes in total nonfarm employment had averaged 190,000 through January 2018, resulting in an overall employment growth of 18.1 million.

Employment by industry sector

Employment losses by major industry sector reflect the Great Recession's breadth. An analysis of employment peaks by industry shows that the recession hit certain industries first. Employment levels in manufacturing, information, construction, financial activities, retail trade, professional and business services, and leisure and hospitality all peaked before total nonfarm employment. Job declines in other industries—mining and logging, government, other services, and transportation and warehousing—occurred after the peak in total nonfarm employment, as it took time for the recession to ripple its way through the economy. The employment recovery by industry sector has been uneven, with some industries recovering completely and then expanding, and others having yet to recover. Figure 3 displays the employment recovery, by sector, through January 2018, based on the recession-related peak of each industry.

Figure 3. Employment recovery, by selected industry sector, seasonally adjusted, January 2018



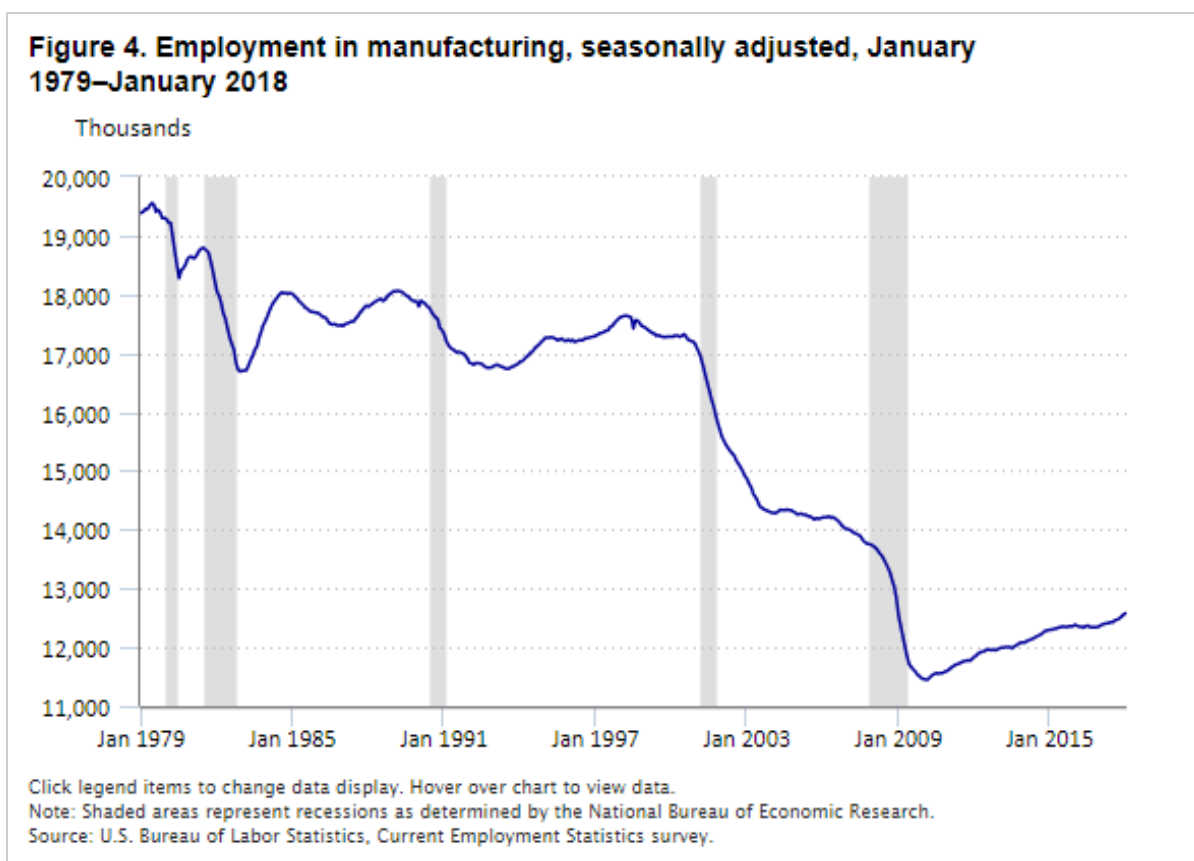
Click legend items to change data display. Hover over chart to view data.

Note: Employment recovery estimates are calculated as the percent change from a sector's January 2018 employment level to its recession-related peak level.

Source: U.S. Bureau of Labor Statistics, Current Employment Statistics survey.

Manufacturing

The all-time employment peak in manufacturing occurred in June 1979, when the industry reached a level of 19.6 million jobs. (See figure 4.) Since then, employment has trended downward, with trade liberalization, productivity gains, and technological advances cited as some reasons for the industry's long-term decline.⁷ Job losses in manufacturing tend to accelerate during contractionary periods, and the Great Recession was no exception. In manufacturing, complete recoveries from cyclical downturns are rare.



Heading into the most recent employment downturn, manufacturing employment peaked at 14.3 million in August 2004, 41 months before the apex of total nonfarm employment. In the lead-up to the Great Recession, manufacturing job losses were attributed to growing trade deficits.⁸ Once the downturn began, employment losses accelerated. Between the August 2004 peak and the March 2010 trough, the sector shed 2.9 million jobs. Most of these job losses—68 percent—came from the durable goods portion of manufacturing.

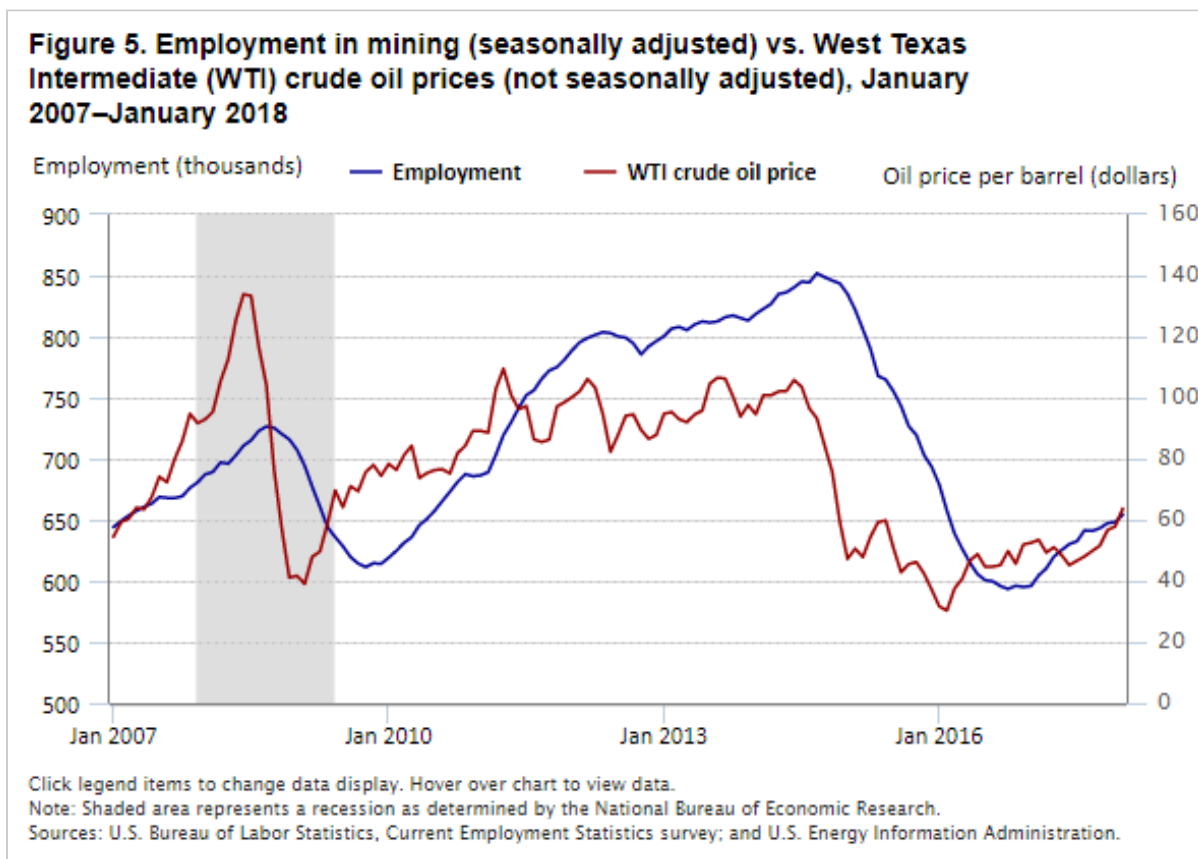
The 1-month diffusion index for manufacturing—an index measuring employment-change dispersion—remained below 50 for 57 of the 67 months during this period.⁹ An index value below 50 indicates that more manufacturing industries are shedding jobs than adding them over the month. Therefore, job losses during the period were pervasive, with the February 2009 value of 7.9 being the lowest point in the index's 28-year history. Since November 2016, however, the sector has seen a change in trend. Through January 2018, employment in manufacturing increased by 239,000 jobs, with 65 percent of these gains coming from durable goods. Within durable goods manufacturing, fabricated metals (+51,000) and machinery (+36,000) accounted for most of the job gains. Nonetheless, manufacturing employment has yet to recover the remaining 1.8 million jobs needed to reach its prerecession peak level.

Mining and logging

Employment in mining, the major component industry within the mining and logging sector, is closely tied to the price of petroleum. As petroleum prices increase, employment tends to grow; as petroleum prices fall, employment tends to decline. (See figure 5.) As total nonfarm employment peaked in January 2008, employment in mining continued to rise, peaking 8 months later, in September. On September 30, 2008, the

price of West Texas Intermediate (WTI) crude oil closed at \$100.70 per barrel, before tumbling to \$40 per barrel by year's end.¹⁰ Subsequently, the mining industry lost 115,000 jobs through its October 2009 trough.

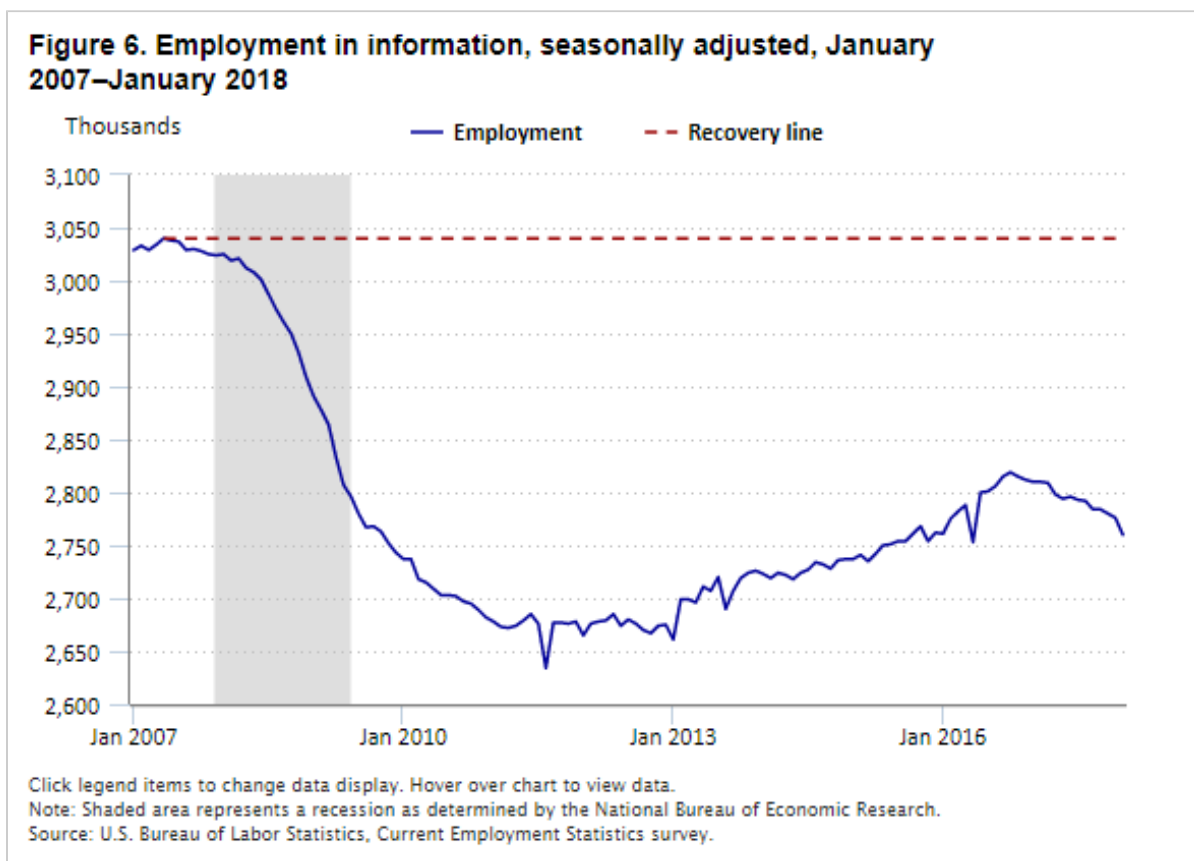
Mining employment recovered in May 2011 and continued to expand by another 122,000 jobs through its September 2014 peak. However, another collapse in oil prices that began in November 2014 led to employment losses totaling 259,000 jobs through the October 2016 trough. The ongoing oil glut was due, in part, to a boom in U.S. production, coined the “shale revolution” and stemming from hydraulic fracturing.¹¹ More recently, rising global demand, production outages in Venezuela, and a production cut agreement enacted by the Organization of the Petroleum Exporting Countries (OPEC) and Russia in January 2017 have driven up oil prices and, therefore, employment.¹² In January 2018, mining employment remained 72,000 jobs shy of its September 2008 peak and 198,000 jobs short of its most recent peak (September 2014).



Information

The information industry brings together establishments that create and disseminate various types of cultural products. The North American Industry Classification System (NAICS) defines the industry as “establishments engaged in the following processes: (a) producing and distributing information and cultural products, (b) providing the means to transmit or distribute these products as well as data or communications, and (c) processing data.”¹³ Information is an ever-changing industry affected by emerging technologies. Industries within the information sector include publishing and broadcasting activities (except over the internet), internet publishing and broadcasting, motion picture and sound recording industries, and telecommunications.

Employment in information peaked in May 2007, 8 months before total nonfarm employment, and troughed in January 2013—losing 379,000 jobs in the interim. The industry recovered 158,000, or 41.7 percent, of the jobs it lost during the most recent downturn, before reaching another employment peak in October 2016. As of January 2018, information employment has fallen by 59,000 and remains shy of the May 2007 peak by 280,000 jobs. (See figure 6.)



Construction

Construction activity is considered a leading indicator of the business cycle, with housing starts and building permits serving as key gauges of the health of the economy.¹⁴ Employment in the sector peaked in April 2006, 21 months before total nonfarm employment, and then declined by 2,299,000, hitting a trough in January 2011. Through January 2018, the industry had yet to fully recover, falling short of the April 2006 peak by 626,000 jobs. The current weakness in the construction industry is affected by the difficulty in recruiting and retaining construction workers, particularly in specialty trades.¹⁵ Many former specialty workers moved on to other industries after the downturn.¹⁶ This challenge is further complicated by a national housing supply shortage and, thereby, appreciating home prices.¹⁷

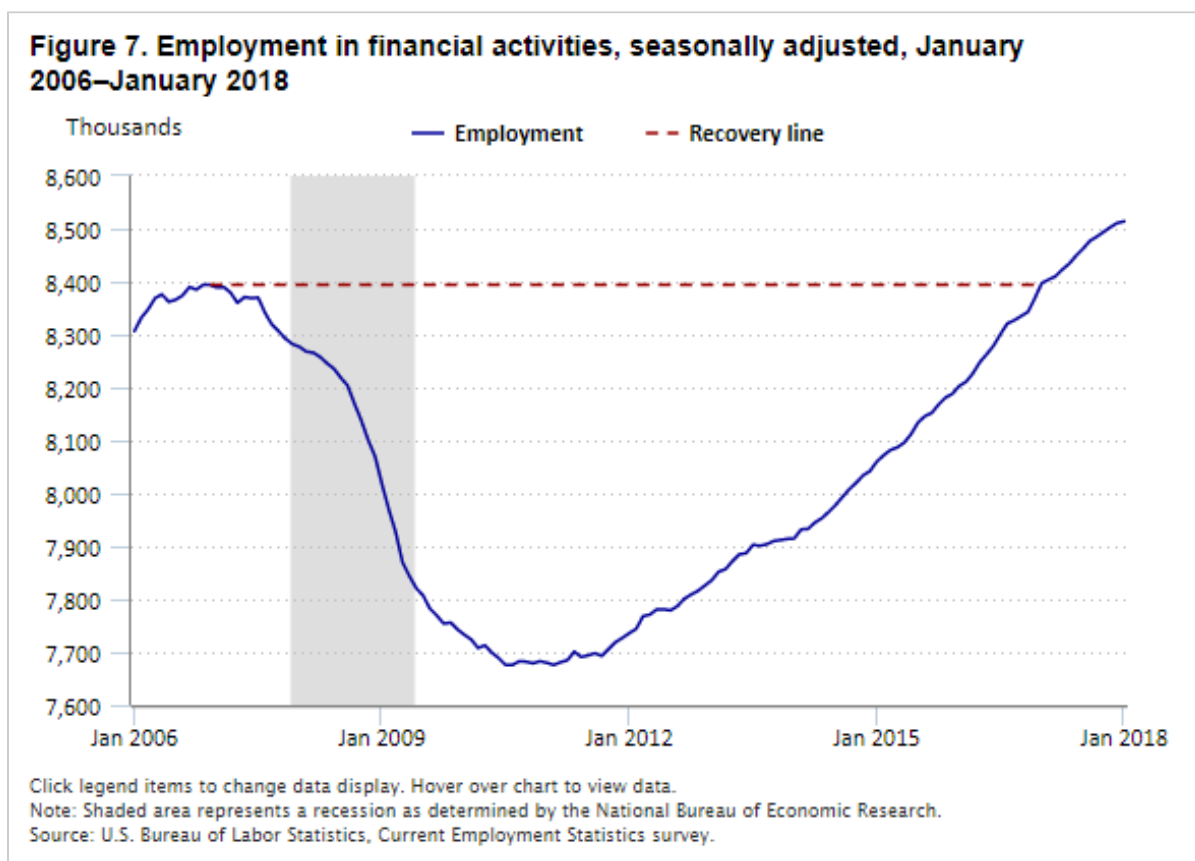
Government

In the CES survey, government employment covers federal (civilian employees only), state, and local workers.¹⁸ Employment in the public sector is closely tied to appropriated funds.¹⁹ For this reason, budget cuts and uncertainty due to changes in tax revenues can hamper government employment.²⁰ In addition, employment

trends can take more time to materialize. Government employment peaked 15 months after the peak in total nonfarm employment and then troughed 47 months after total nonfarm employment reached its low. Government employment fell by 867,000 during this period (April 2009 through January 2014). From January 2014 through January 2018, employment in government grew by 509,000, but remained short of a full recovery by 358,000 jobs.

Financial activities

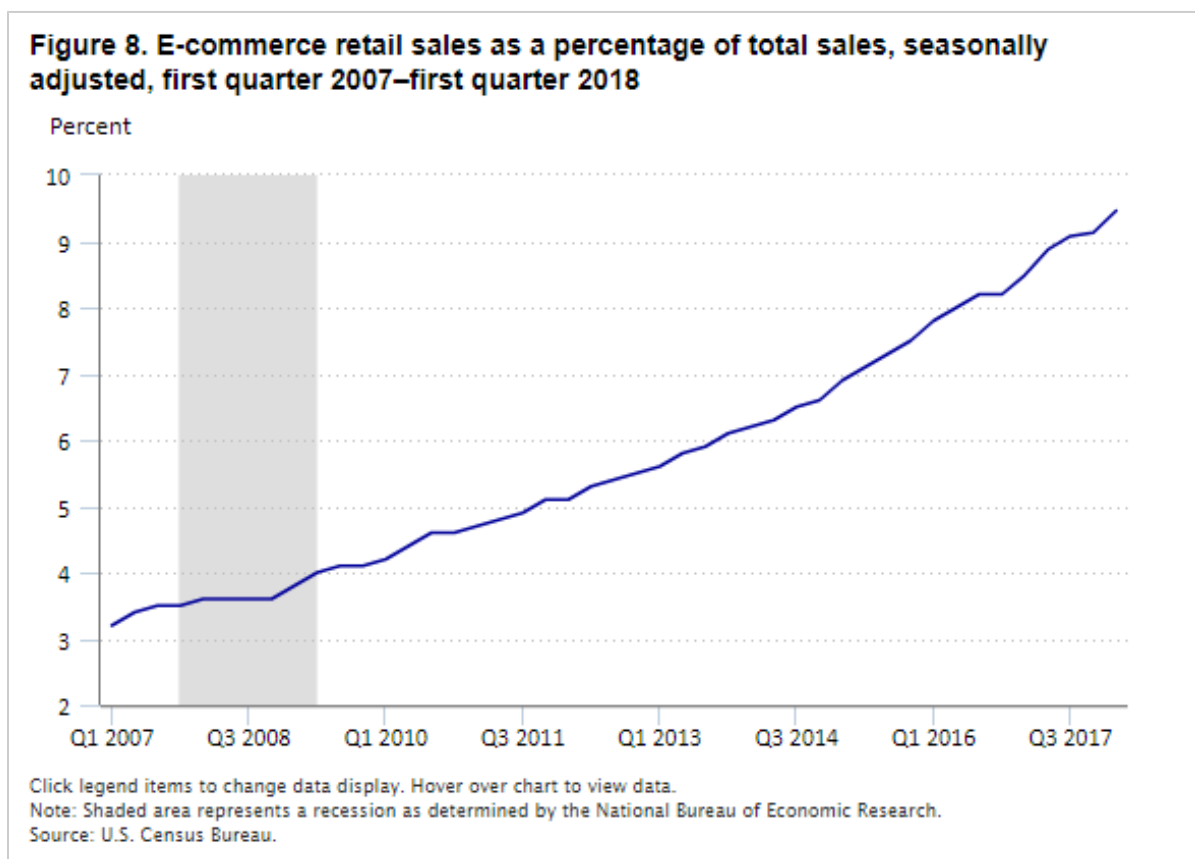
The housing crash and the credit crunch deeply afflicted employment in financial activities, as major institutions lost billions of dollars, and some shuttered altogether.²¹ Employment in the industry peaked in December 2006, 13 months before total nonfarm employment, and troughed in February 2011, with losses totaling 718,000. The sector's 50-month peak-to-trough period was twice as long as that of total nonfarm employment, signaling a more protracted employment slump than the one in the aggregate economy. In addition, job losses in financial activities were larger than those in any other employment downturn in the sector's history. Employment in financial activities exceeded its prerecession peak in January 2017 and expanded by 117,000 through January 2018. (See figure 7.)



Retail trade

Retail trade employment peaked in December 2007, a month before total nonfarm employment, and reached a trough exactly 2 years later. In the interim, job losses totaled 1.2 million. Employment in the sector is tied to consumer demand, which has increasingly tilted toward mobile shopping. From the fourth quarter of 2009 to the

first quarter of 2018, the proportion of e-commerce sales more than doubled, accounting for 9.5 percent of total sales.²² (See figure 8.) Facing strong e-commerce competition, many brick-and-mortar stores have closed some or all of their locations. In fact, in 2017, there were 1,200 malls across the United States, a figure that is projected to fall to 900, or by 25 percent, in 10 years.²³ The expansion of e-commerce is captured in the nonstore retailers component of retail trade, which has been growing since 2010. Overall, retail trade employment recovered in April 2015, subsequently expanding by 304,200 jobs through January 2018.



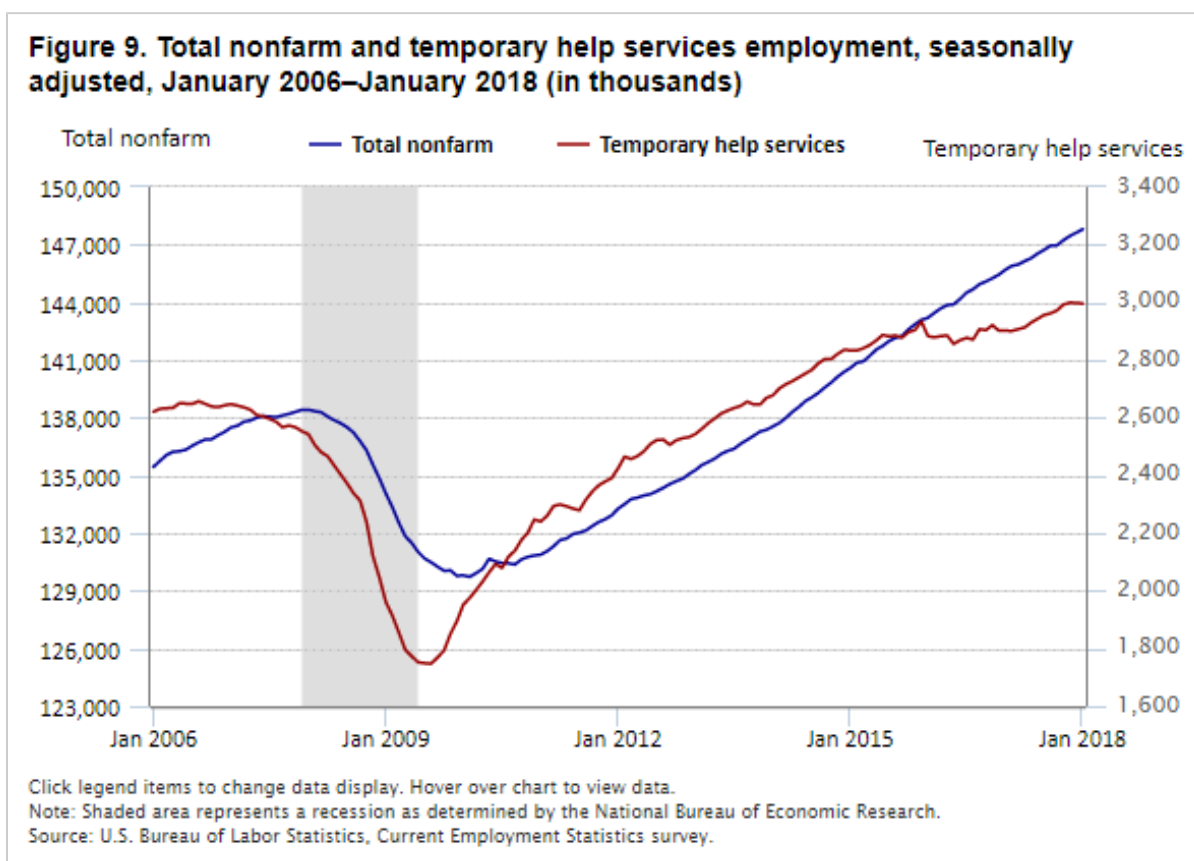
Other services

Establishments engaged in activities not specified elsewhere in the NAICS are classified in the category of other services.²⁴ Component industries in this sector include equipment and machinery repair, religious administration, grant making, dry cleaning and laundry services, and personal care services. Employment in other services peaked in April 2008 (3 months after total nonfarm employment) and troughed in June 2010 (also 3 months after total nonfarm employment), shedding 225,000 jobs in the interim. Employment in other services recovered in March 2014, 2 months before total nonfarm employment. From that time through January 2018, the sector added 272,000 jobs, with personal and laundry services accounting for 55 percent of the gain.

Professional and business services

Employment in professional and business services reached a peak in December 2007, a month before total nonfarm employment, and then declined for 20 months. Between December 2007 and August 2009, the industry contracted by 1.7 million jobs. As seen in figure 9, employment changes in temporary help services, a

component industry within professional and business services, are a leading indicator for total nonfarm employment. Firms tend to use these services as a means of quickly meeting demand for their products. Temporary help services employment peaked in August 2006, 17 months before total nonfarm employment, and troughed 3 years later (August 2009), 6 months before payroll employment. Since 2011, the computer systems design and related services industry, together with management and technical consulting services, has been among the fastest growing industries in the CES sample. As a result, employment in professional and business services has seen strong growth in recent years—surpassing its prerecession peak in October 2012. Through January 2018, the industry expanded by an additional 2.6 million jobs.



Transportation and warehousing

Transportation and warehousing is composed of industries that offer the following services: transport of cargo and passengers, warehousing and storage for goods, and support activities for varying carriage modes (e.g., air, rail, water, truck).²⁵ Employment in transportation and warehousing peaked in April 2008, 3 months after the peak in total nonfarm employment, and troughed in December 2009, shedding 443,000 jobs in the interim. Nonetheless, the industry fully recuperated its lost jobs by January 2014 and then expanded by an additional 682,000 jobs through January 2018.

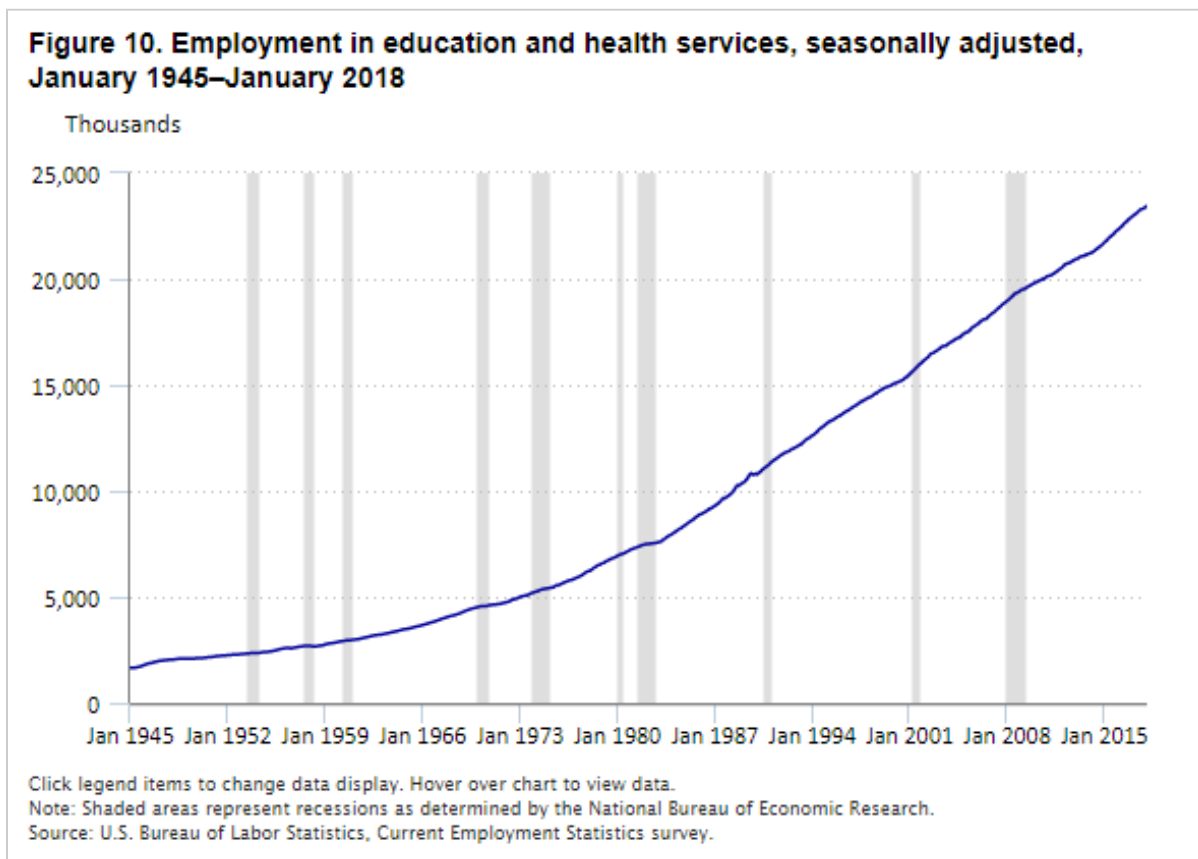
Leisure and hospitality

Employment in leisure and hospitality peaked in December 2007, only a month before total nonfarm employment, and troughed in February 2010, concurrently with payroll employment. In that span, the industry

shed 623,000 jobs. Employment in leisure and hospitality is affected by several factors, including gasoline prices, disposable income, food prices, and home prices. For example, low gasoline prices between 2014 and 2016 benefitted hotels, restaurants, and amusement parks, as Americans drove a record 3.2 trillion miles in 2016.²⁶ Moreover, changes in real disposable income affect consumer spending on goods and services. Consumption remained below the industry's prerecession level 15 quarters after the onset of the most recent recession, longer than the previous five recessions.²⁷ As a result, it took 49 months for leisure and hospitality employment to exceed its December 2007 peak. After recovering in January 2012, employment in the industry saw robust gains, to the tune of 2.6 million jobs through January 2018.

Education and health services

Employment in education and health services has been resilient to market vicissitudes. This resilience is due, in part, to the inelastic nature of healthcare component industries (demand for healthcare has been found to be robust regardless of price changes).²⁸ No matter the business cycle, over-the-year employment changes in education and health services have been positive since 1945. (See figure 10.)



In other words, the industry has been the least cyclical within total nonfarm employment. In fact, its job growth has averaged 3.3 percent during the last five recessions. Since 1990, most of the industry's growth has been concentrated in healthcare. Over the most recent downturn in total nonfarm employment (January 2008–February 2010), the sector added 861,000 jobs, with healthcare accounting for 64 percent of the gains.

Summary

Ten years after reaching a peak, total nonfarm employment has not only recovered from its pronounced downturn, but expanded by an additional 9.2 million jobs. Several industries—manufacturing, information, construction, mining and logging, and government—have yet to recover. Other industries—financial activities, retail trade, other services, transportation and warehousing, professional and business services, and leisure and hospitality—have recovered and expanded. As of January 2018, total nonfarm employment had recorded 88 consecutive months of growth, marking the longest recovery and expansionary streak in CES history.

SUGGESTED CITATION

Wander Cedeño, "How did employment fare a decade after its 2008 peak?," *Monthly Labor Review*, U.S. Bureau of Labor Statistics, October 2018, <https://doi.org/10.21916/mlr.2018.25>.

NOTES

¹ The CES program, which provides detailed industry data on employment, hours, and earnings of workers on nonfarm payrolls, is a monthly survey of about 149,000 businesses and government agencies representing approximately 651,000 individual worksites. For more information on the program's concepts and methodology, see "Technical notes for the Current Employment Statistics survey," *Current Employment Statistics—CES (national)* (U.S. Bureau of Labor Statistics, February 2, 2018), <https://www.bls.gov/web/empsit/cestn.htm>. To access CES data, see <https://www.bls.gov/ces/>. CES data are seasonally adjusted unless otherwise noted. Over-the-year changes are calculated from December of the previous year through December of the reference year.

² For more information on the CES benchmark and seasonal adjustment, see <https://www.bls.gov/ces/tables.htm#benchmark> and <https://www.bls.gov/web/empsit/cestn.htm#section6e>.

³ See "U.S. business cycle expansions and contractions" (Cambridge, MA: National Bureau of Economic Research), <http://www.nber.org/cycles.html>.

⁴ The Current Employment Statistics (CES) program identifies key turning points in seasonally adjusted CES time series as peaks and troughs. These key turning points are those which mark the beginning of sustained periods of growth or contraction in the time series. These changes in trend are distinct from month-to-month or other short-term fluctuations. For more information on CES employment peaks and troughs, see "CES peak–trough tables," *Current Employment Statistics—CES (national)* (U.S. Bureau of Labor Statistics, December 10, 2012), <https://www.bls.gov/ces/cespeaktrough.htm>.

⁵ Total nonfarm employment had 95 consecutive positive over-the-month changes through August 2018.

⁶ The current CES monthly total nonfarm payroll employment series goes back to January 1939.

⁷ Drew Desilver, "Most Americans unaware that as U.S. manufacturing jobs have disappeared, output has grown" (Washington, DC: Pew Research Center, July 25, 2017), <http://www.pewresearch.org/fact-tank/2017/07/25/most-americans-unaware-that-as-u-s-manufacturing-jobs-have-disappeared-output-has-grown/>.

⁸ Robert E. Scott, "Manufacturing job loss: trade, not productivity, is the culprit," Issue Brief 402 (Washington, DC: Economic Policy Institute, August 11, 2015), <https://www.epi.org/publication/manufacturing-job-loss-trade-not-productivity-is-the-culprit/>.

⁹ The CES 1-month diffusion index for manufacturing measures the dispersion of employment change across industries over the month. The overall index is calculated from 76 seasonally adjusted employment series (primarily four-digit NAICS industries). In

the calculation, each component industry is assigned a value of 0 percent, 50 percent, or 100 percent, depending on whether its employment showed a decrease, no change, or an increase, respectively, over the month. The average value (mean) is then calculated, and this percentage is the diffusion-index number.

¹⁰ “Cushing, OK, WTI spot price FOB,” *Petroleum and other liquids* (U.S. Energy Information Administration), <https://www.eia.gov/dnav/pet/hist/rwtcD.htm>.

¹¹ Stephen P. A. Brown and Mine K. Yucel, “The shale gas and tight oil boom” (New York and Washington, DC: Council on Foreign Relations, October 15, 2013), <https://www.cfr.org/report/shale-gas-and-tight-oil-boom>.

¹² “OPEC reaches a deal to cut production,” *The Economist*, December 3, 2016, <https://www.economist.com/finance-and-economics/2016/12/03/opec-reaches-a-deal-to-cut-production>.

¹³ See “Sector 51—Information,” *2017 NAICS definition* (U.S. Census Bureau), <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=51&search=2017%20NAICS%20Search>.

¹⁴ See “Construction indicators” (Honolulu, HI: The Economic Research Organization at the University of Hawai‘i), <http://www.uhero.hawaii.edu/104/construction-indicators>.

¹⁵ “Eighty percent of contractors report difficulty finding qualified craft workers to hire as association calls for measures to rebuild workforce” (Arlington, VA: The Associated General Contractors of America, August 29, 2018), <https://www.agc.org/news/2018/08/29/eighty-percent-contractors-report-difficulty-finding-qualified-craft-workers-hire>.

¹⁶ Scott Beyer, “America’s housing construction labor shortage continues,” *Forbes*, April 29, 2017, <https://www.forbes.com/sites/scottbeyer/2017/04/29/americas-housing-construction-labor-shortage-continues/#7ef4bd36706c>.

¹⁷ Hari Kishan and Rahul Karunakar, “U.S. house prices to rise at twice the speed of inflation and pay: Reuters poll,” *Reuters*, June 6, 2018, <https://www.reuters.com/article/us-usa-property-poll/u-s-house-prices-to-rise-at-twice-the-speed-of-inflation-and-pay-reuters-poll-idUSKCN1J20G3?il=0>.

¹⁸ Within federal employment, members of the Central Intelligence Agency, the National Security Agency, the National Imagery and Mapping Agency, and the Defense Intelligence Agency are excluded.

¹⁹ “Appropriations 101” (Washington, DC: Committee for a Responsible Federal Budget, May 30, 2018), <http://www.crfb.org/papers/appropriations-101>.

²⁰ “Managing uncertainty: how state budgeting can smooth revenue volatility” (The Pew Charitable Trusts, February 2014), https://www.pewtrusts.org/~media/legacy/uploadedfiles/pes_assets/2014/volatilitymanaginguncertaintypdf.pdf.

²¹ Michelle Park Lazette, “The crisis, the fallout, the change: the Great Recession in retrospect” (Federal Reserve Bank of Cleveland, December 18, 2017), <https://www.clevelandfed.org/newsroom-and-events/multimedia-storytelling/recession-retrospective.aspx>.

²² “Monthly retail trade” (U.S. Census Bureau), <https://www.census.gov/retail/index.html>.

²³ Derek Thompson, “What in the world is causing the retail meltdown of 2017?” *The Atlantic*, April 10, 2017, <https://www.theatlantic.com/business/archive/2017/04/retail-meltdown-of-2017/522384/>.

²⁴ The North American Industry Classification System (NAICS) classifies the category of other services (except public administration) as part of the service-providing supersector group. See “Other services (except public administration): NAICS 81,” *Industries at a glance* (U.S. Bureau of Labor Statistics), <https://www.bls.gov/iag/tgs/iag81.htm>.

²⁵ See “Sector 48–49—Transportation and warehousing,” *2017 NAICS definition* (U.S. Census Bureau), <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=48&search=2017%20NAICS%20Search>.

[26](https://www.npr.org/sections/thetwo-way/2017/02/21/516512439/record-number-of-miles-driven-in-u-s-last-year) David Schaper, “Record number of miles driven in U.S. last year,” *National Public Radio*, February 17, 2017, <https://www.npr.org/sections/thetwo-way/2017/02/21/516512439/record-number-of-miles-driven-in-u-s-last-year>.

[27](https://inequality.stanford.edu/sites/default/files/Consumption_fact_sheet.pdf) Iyaylo D. Petev and Luigi Pistaferri, “Consumption in the Great Recession” (Stanford, CA: The Russell Sage Foundation and the Stanford Center on Poverty and Inequality, October 2012), https://inequality.stanford.edu/sites/default/files/Consumption_fact_sheet.pdf.

[28](https://www.rand.org/pubs/monograph_reports/MR1355.html) Jeanne S. Ringel, Susan D. Hosek, Ben A. Vollaard, and Sergej Mahnovski, “The elasticity of demand for health care: a review of the literature and its application to the military health system” (Santa Monica, CA: RAND Corporation, 2002), https://www.rand.org/pubs/monograph_reports/MR1355.html.

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